Natural Resource Concern	Description of Concern	Virginia Quality Criteria	Assessment Tools for Quality Criteria Evaluation	Measurement Unit
Water Quantity - Excessive Runoff, Flooding, or Ponding	The land becomes inundated restricting land use and management.	**SAME AS NATIONAL** Excess water amounts and/or rates of flow are controlled consistent with desired present or intended land use goals and wetland policies.	• Visual assessment • Client interview • Stream Visual Assessment Protocol • National Engineering Handbook (EFH – chapter 2 and 3) • Hydrologic models, e.g. HECRAS,TR-20,TR-55 • NASIS (State Soil Database)	Non Measurable
Water Quantity - Excessive Subsurface Water	Water saturates upper soil layers restricting land use and management.	**SAME AS NATIONAL** Subsurface water is managed to limit periods of saturation compatible with the present or intended land use and wetland policies.	• Visual assessment of soil cores and coring holes • Plant quality and quantity measurements • National Engineering Handbook, Part 650 (EFH-Chapter 14) • Soils Data Mart	Non Measurable
Water Quantity - Inadequate Outlets	Natural or constructed outlets too small to remove excess water in a timely manner.	Outlets are designed, installed, upgraded or maintained to adequately convey water for present or intended uses. Actions will meet state, federal, and local regulations.	• Visual assessment • Client interview • National Engineering Handbook, part 650 (EFH – Chapters 2,3,7) • Hydrologic models, e.g. HECRAS, TR-20, TR-55	Non Measurable
Water Quantity - Inefficient Water Use on Irrigated Land	Limited water supplies are not optimally utilized.	**SAME AS NATIONAL** Land and water management is planned and coordinated to provide optimal use of natural and applied moisture.	• Visual assessment • National Engineering Handbook, Part 652, Irrigation Guide • Crop quality and quantity measurements • Farm Irrigation Rating Method (FIRM)	Acre-Inches/Acre/Year **–** average annual acre-inches of water per acre used more beneficially for the field or planning area/unit
Water Quantity - Inefficient Water Use on Non-irrigated Land	Natural moisture is not optimally utilized.	**SAME AS NATIONAL** Management provides optimum use of natural moisture for the present or intended land use.	• Visual assessment • Plant or animal quality and quantity measurements	Acre-Inches/Acre/Year **–** average annual acre-inches of water per acre used more beneficially for the field or planning area/unit

Natural Resource Concern	Description of Concern	Virginia Quality Criteria	Assessment Tools for Quality Criteria Evaluation	Measurement Unit
Water Quantity - Reduced Capacity of Conveyances by Sediment Deposition	Sediment deposits in ditches, canals, culverts, and other water conveyances reduce the desired flow capacity.	Conveyance structures are upgraded or maintained to adequately convey water for present or intended uses. Actions will meet state, federal, and local regulations.	• Visual assessment • Client interview • National Engineering Handbook, Part 650 (EFH – Chapters 2,3,70 • Hydrologic models, e.g., HECRAS, TR-20, TR-55	Cubic yards **–** volume of sediment in cubic yards removed to maintain water conveyances for the field or planning area/unit
Water Quantity - Reduced Storage of Water Bodies by Sediment Accumulation	Sediment deposits in water bodies reduce the desired volume capacity.	Water bodies and contributing source areas are treated to allow sufficient water storage for present and intended uses. Actions will meet state, federal, and local regulations.	• Visual assessment • Depth and area measurements • National Engineering Handbook, Part 650 (EFH – Chapters 2,3,7,11)	Acre-Inches/Year **–** average annual reduction in acre-inches in sediment deposition within water bodies for the field or planning area/unit
Water Quantity - Aquifer Overdraft	Water withdrawals exceed the safe yield for the aquifer.	**SAME AS NATIONAL** Land and water management are coordinated to balance aquifer recharge and withdrawals to maintain the safe yield for the aquifer.	• Water level measurements	Acre-Inches/Year **–** average annual reduction in acre-inches of groundwater overdraft for the field or planning area/unit
Water Quantity – Insufficient Flows in Water Courses	Water flows are not consistently available in sufficient quantities to support ecological processes and land use and management.	**SAME AS NATIONAL** Authorized uses and management of water are coordinated to minimize the impacts on water course flows.	• Visual assessment • Water flow records • Gauge Station data • Consumptive use/allocation water rights • Habitat Evaluation Guides • National Biology Handbook • SVAP	Non Measurable

Natural Resource Concern	Description of Concern	Virginia Quality Criteria	Assessment Tools for Quality Criteria Evaluation	Measurement Unit
Water Quality - Harmful Levels of Pesticides in Groundwater	Residues resulting from the use of pest control chemicals degrade groundwater quality.	**SAME AS NATIONAL** Pesticides are applied, stored, handled, disposed of, and managed so that groundwater uses are not adversely affected	• WIN-PST (Windows Pesticide Screening Tool – USDA/NRCS) • NAPRA (National Agricultural Pesticide Risk Analysis – USDA/NRCS) • Vadose zone and groundwater chemical sampling and assay	Non Measurable
Water Quality - Excessive Nutrients and Organics in Groundwater	Pollution from natural or human induced nutrients such as N, P, and S (including animal and other wastes) degrades groundwater quality.	**SAME AS NATIONAL** Nutrients and organics are stored, handled, disposed of, and applied such that groundwater uses are not adversely affected.	• National Engineering Handbook, Part 651, Ag. Waste Mgt. Field Handbook • Nitrate Leaching Index • Phosphorus Leaching Index • Farm*A*Syst • Vadose zone and groundwater chemical/particle sampling and assay	Non Measurable
Water Quality - Harmful Levels of Heavy Metals in Groundwater	Natural or human induced metal pollutants present in toxic amounts degrade groundwater quality.	**SAME AS NATIONAL** Materials containing heavy metals are stored, handled, disposed of, applied, and managed such that groundwater uses are not adversely affected.	• Vadose zone and groundwater chemical sampling and assay	Non Measurable
Water Quality - Harmful Levels of Pathogens in Groundwater	Kinds and numbers of viruses, protozoa, and bacteria are present at a level that degrades groundwater quality.	**SAME AS NATIONAL** Materials that harbor pathogens are stored, handled, disposed of, applied, and managed such that groundwater uses are not adversely affected.	• Vadose zone and groundwater chemical sampling and assay • National Engineering Handbook, Part 651, Agricultural Waste Management Field Handbook	Non Measurable

Natural Resource Concern	Description of Concern	Virginia Quality Criteria	Assessment Tools for Quality Criteria Evaluation	Measurement Unit
Water Quality - Harmful Levels of Petroleum in Groundwater	Fuel, oil, gasoline and other hydrocarbons present in toxic amounts degrade groundwater quality.	**SAME AS NATIONAL** Petroleum products are used, stored, handled, disposed of, and managed such that groundwater uses are not adversely affected.	• Vadose zone and groundwater chemical sampling and assay	Non Measurable
Water Quality - Harmful Levels of Pesticides in Surface Water	Pest control chemicals present in toxic amounts degrade surface water quality.	**SAME AS NATIONAL** Pesticides are applied, stored, handled, disposed of, and managed such that surface water uses are not adversely affected	• WIN-PST (Windows Pesticide Screening Tool – USDA/NRCS) • NAPRA (National Agricultural Pesticide Risk Analysis – USDA/NRCS) • Surface water chemical sampling assay	Non Measurable
Water Quality - Excessive Nutrients and Organics in Surface Water	Pollution from natural or human induced nutrients such as N, P, and S (Including animal and other wastes) degrades surface water quality.	Nutrients and organics are stored, handled, disposed of, and managed such that surface water uses are not adversely affected. Meet criteria defined in Nutrient Management (590) standard.	• SVAP (Stream Visual Assessment Protocol – USDA/NRCS) • P index • National Engineering Handbook, Part 651, Ag. Waste Mgt. Field Handbook • Surface water chemical/particle sampling and assay • DCR 303d report	Non Measurable
Water Quality - Excessive Suspended Sediment and Turbidity in Surface Water	Excessive concentrations of mineral or organic particles, algae, or organic stains degrade surface water quality.	**SAME AS NATIONAL** Delivery or suspension of mineral and organic particles, and excessive algae growth or organic stains, is managed such that surface water uses are not adversely affected.	• Visual assessment • Client interview • SVAP (Stream Visual Assessment Protocol – USDA/NRCS) • Water Quality Indicators Guide – Surface Waters, Field Sheets IA and 1B (Terrene Institute ©1996) • Surface water chemical/particle sampling and assay • DCR 303d report	Non Measurable

Natural Resource Concern	Description of Concern	Virginia Quality Criteria	Assessment Tools for Quality Criteria Evaluation	Measurement Unit
Water Quality - Harmful Temperatures of Surface Water	Undesired thermal conditions degrade surface water quality.	**SAME AS NATIONAL** Use and management of land and water are coordinated to minimize impacts on surface water temperatures.	• SVAP (Stream Visual Assessment Protocol – USDA/NRCS) – canopy cover • HSI model for target species (Habitat Suitability Index – USF&WS) • Surface water temperature sampling and assay	Non Measurable
Water Quality - Harmful Levels of Pathogens in Surface Water	Kinds and numbers of viruses, protozoa, and bacteria are present at a level that degrades surface water quality.	**SAME AS NATIONAL** Materials that harbor pathogens are stored, handled, disposed of, applied, and managed such that surface water uses are not adversely affected.	• Surface water pathogen sampling and assay • National Engineering Handbook, Part 651, Agricultural Waste Management Field Handbook • DCR 303d report	Non Measurable
Water Quality - Harmful Levels of Petroleum in Surface Water	Fuel, oil, gasoline and other hydrocarbons present in toxic amounts degrade surface water quality.	**SAME AS NATIONAL** Petroleum products are used, stored, handled, and disposed of such that surface water uses are not adversely affected.	• Surface water chemical sampling and assay	Non Measurable